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IS 9504 (2007): L (+) - Tartaric Acid, Food Grade [FAD 8: Food Additives]

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भारतीय मानक

एल (+)-टार्टारिक अम्ल, खाद्य ग्रेड — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

L(+)-TARTARIC ACID, FOOD GRADE — SPECIFICATION

(First Revision)

ICS 67.220.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 2007 **Price Group 2**

Food Additives Sectional Committee, FAD 8

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

With the increased production of processed foods, manufacturers have started adding a large number of substances, generally in small quantities, to improve the appearance, flavour, texture or storage properties of the processed foods. As impurities in these substances have been found to be harmful, it is necessary to have a strict quality control of these food additives. Use of tartaric acid as has been permitted for certain foods in the *Prevention of Food Adulteration Rules*, 1955. This standard would help in checking purity which requires to be checked at the stage of manufacture, for it is extremely difficult (and in many cases impossible) to detect the impurity once these substances are added to the processed foods.

This standard was first published in 1980 based on the then existing 'Specification for identity and purity of food additives' published by FAO ans WHO and the specifications laid down by Food Chemical Codex of USA. This standard is being revised taking into consideration the latest publication for standard of monosodium L-glutamate issued by JECFA. In this revision the limits for heavy metal contaminants have been made more stringent and methods of test have been revised and updated.

Chemical Name

Tartaric acid - 2,3-dihydroxy succinic acid. Its empirical formula is $C_4H_6O_6$, its molecular weight is 150.09 and structural formula is HOOC-CHOH-CHOH-COOH.

Due consideration has also been given to the *Prevention of Food Adulteration Rules,* 1955 and *Standard of Weights and Measures (Packaged Commodities) Rules*, 1977. However, this standard is subject to restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

L(+)-TARTARIC ACID, FOOD GRADE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for L (+) - tartaric acid, food grade.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
1699 : 1995	Methods of sampling and test for food colours (*second revision*)
2491 : 1998	Food hygiene — General principles — Code of practice (*second revision)*

3 REQUIREMENTS

3.1 Description

L(+)-tartaric acid shall be either in the form of colourless or translucent crystals, or a white, fine to granular, crystalline powder. It shall be odourless, acidic in taste and stable in air.

3.2 Identification

3.2.1 *Solubility*

L(+)-tartaric acid shall be very soluble in water and freely soluble in ethanol.

Ten percent solution shall be dextrorotatory.

3.2.2 *Positive Test for Tartarate*

When 10 percent solution of the material is added to a mixture of 15 ml of pyridine and 5 ml of acetic anhydride, an emerald green colour is produced.

3.2.3 *Specific Rotation*

[alpha] 20, D : between + 11.5° to + 13.5° [10 g of dried sample in 50 ml of water].

3.3 The material shall conform to the requirements given in Table 1.

3.4 The product shall be processed, packed, stored and distributed under hygienic conditions in licenced premises (*see* IS 2491).

Table 1 Requirements for L(+)-Tartaric Acid

(*Clause* 3.3)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Clause of IS 1699
(1)	(2)	(3)	(4)	(5)
i)	Purity as ($C_4H_6O_6$), percent by mass, (on dry basis), *Min*	99.5	A	—
ii)	Loss on drying, percent by mass, on drying at 105°C for 3 h over P_3O_4, *Max*	0.5	—	—
iii)	Sulphated ash, percent by mass, *Max*	0.1	B	—
iv)	Oxalate	To pass the test	C	—
v)	Sulphate	0.05	D	—
vi)	Arsenic (as As), mg/kg, *Max*	3	—	15
vii)	Lead (as Pb), mg/kg, *Max*	2	—	15

4 PACKING, STORAGE AND MARKING

4.1 Packing

The product shall be securely packed in well-filled containers with minimum access to light and moisture. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

4.2 Storage

The material shall be stored in a cool and dry place so as to avoid excessive exposure to heat.

4.3 Marking

Each container shall be marked legibly to give the following information:

a) Name of the material;

b) Name and address of the manufacturer;

c) Batch or Code number;

d) Net content when packed;

e) Instruction for storage to include 'Store away from direct sunlight and heat';

f) Best before date (Month and Year to be given by the manufacturer); and

g) Any other requirements as given under the *Standards of Weights and Measures (Packaged Commodities) Rules*, 1977 and *Prevention of Food Adulteration Act,* 1955 and Rules.

4.3.1 *BIS Certification Marking*

The product may also be marked with the Standard Mark.

4.3.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING

Representative samples of the material shall be drawn according to the method prescribed in **4** of IS 1699.

6 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the result of analysis.

ANNEX A

[*Table* 1, *Sl No.* (i)]

DETERMINATION OF PURITY

A-1 PROCEDURE

Weigh accurately about 2.0 g of tartaric acid, previously dried over phosphorus pentoxide for 3 h. Dissolve it in 40 ml of water, and titrate with the sodium hydroxide using phenolphthalein as indicator. Each ml of 1 N sodium hydroxide is equivalent to 75.04 mg of $C_4H_6O_6$.

ANNEX B

[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF SULPHATED ASH

B-1 PROCEDURE

Weigh accurately, about 2 g of the material in a tared crucible. Ignite, gently at first, until the material is thoroughly charred. Cool and moisten the residue with 1 ml of sulphuric acid and ignite gently till the carbon is cmpletely comusted. Cool the crucible in a desiccator and weigh.

NOTE — Carry out the ignition in a place protected from air currents and use as low a temperature as possible to effect the combustion of carbon.

B-2 CALCULATION

$$\text{Sulphated ash, percent by mass} = \frac{M_1}{M_2}$$

where

M_1 = mass, of the residue, in g; and

M_2 = mass, of the material taken for the test, in g.

ANNEX C

[*Table* 1, *Sl No.* (iv)]

DETERMINATION OF OXALATE

C-1 REAGENTS

C-1.1 Ammonia Solution — 10 percent.

C-1.2 Calcium Sulphate Solution — Saturated.

C-2 PROCEDURE

Add ammonia solution to 10 ml of the 1 in 100 solution of the sample so as to almost neutralize it. Add 10 ml of calcium sulphate solution. No turbidity shall be produced.

ANNEX D

[*Table* 1, *Sl No.* (v)]

DETERMINATION OF SULPHATES

D-1 PROCEDURE

To 10 ml of a 1 in 100 solution, add 3 drops of hydrochloric acid (10 percent *m/v*) and 1 ml of barium chloride ($BaCl_2 . 2H_2O$) solution (12 g barium chloride dissolved in water and made up 100 ml). No turbidity shall be produced.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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